REMARKS

Claims 11, 38 and 39 have been amended. Proper support for the amendments to the claims can be found in the specification, at least, at paragraphs [0105] and [0107]. Claims 11-24, 38 and 39 are pending and under consideration. Claims 11, 38 and 39 are the independent claims. No new matter is presented in this Amendment.

DOUBLE PATENTING

Claims 11-24, 38, and 39 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of U.S. Patent Nos. 6,183,911; 6,753,111; 6,797,435 and 6,846,592.

Since claims 11-24, 38 and 39 of the instant application have not yet been indicated as allowable, it is believed that any submission of a Terminal Disclaimer would be premature (see MPEP 804).

Claims 11-20, 24, 38, and 39 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of co-pending Application No. 10/944,892.

Since claims 11-20, 24, 38 and 39 of the instant application have not yet been indicated as allowable, it is believed that any submission of a Terminal Disclaimer would be premature (see MPEP 804).

REJECTIONS UNDER 35 U.S.C. §102:

Claims 11-20 and 38 are rejected under 35 U.S.C. §102(a) or (e) as being anticipated by Kweon et al. (U.S. Patent 6,183,911).

Applicants respectfully traverse this rejection for at least the following reason.

Regarding the rejection of independent claim 11, it is noted that claim 11 recites a method of preparing a positive active material for a rechargeable lithium battery comprising: coating at least one lithiated compound with an organic solution of coating material source or an aqueous solution of coating material source to produce a coated lithiated compound; and drying the coated lithiated compound at a temperature of approximately 60°C to 100°C forming a

surface treatment layer on the coated lithiated compound without further heat-treating the dried coated lithiated compound, wherein the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof.

Kweon discloses a positive active material for rechargeable lithium batteries and a method of preparing the same (column 1, lines 7-11). The method includes obtaining a powder from a source material and coating the powder with a vanadium pentoxide aqueous solution or a V_2O_5 alcoholic solution to make a V_2O_5 solution-coated powder. Thereafter, the V_2O_5 solution-coated powder is **heat-treated** at a temperature ranging from 100 to 1000°C, for 1 to 20 hours to prepare a V_2O_5 coated active material (column 1, lines 50-63). Kweon further discloses that when the heat-treating temperature is lower than 100°C, the vanadium pentoxide solution coated on the powder is not crystallized, thus prohibiting free movement of lithium ions in the active material (column 2, lines 57-65). Accordingly, Kweon discloses heat treating the solution-coated powder at a temperature greater than 100°C in order to crystallize the powder. However, when heat-treating is performed, a metal oxide layer is formed on the core. This metal oxide layer has relatively low ionic conductivity, which causes the internal resistance to increase and the discharge potential and power density to deteriorate.

Contrary to Kweon, independent claim 11 recites drying the coated lithiated compound **without further heat-treating** the dried coated lithiated compound. When the heat-treating step is not performed, a surface-treatment layer including coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonates or a mixture thereof is formed on the core. This surface-treatment layer reduces the internal resistance and prevents the discharge potential drop so that the active material exhibits high discharge potential. As a result, the positive active material provides good cycle life characteristics, discharge potential, and power, and it also exhibits superior charge and discharge characteristics as compared to that of metal oxide-coated positive active material.

Accordingly, Kweon fails to teach or suggest this novel feature of independent claim 11.

Furthermore, Kweon fails to teach or suggest drying the coated lithiated compound at a temperature of approximately 60°C to 100°C forming a surface treatment layer on the coated lithiated compound, **wherein** the **surface treatment layer includes** a **coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof**, as recited in independent claim 11.

Accordingly, Applicants respectfully assert that the rejection of claim 11 under 35 U.S.C. § 102(a) or (e) should be withdrawn because Kweon fails to teach or suggest each feature of

independent claim 11, as amended.

Furthermore, Applicants respectfully assert that the rejection of dependent claims 12-20 under 35 U.S.C. § 102(a) or (e) should be withdrawn at least because of their dependence from claim 11 and the reasons set forth above, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 12-20 also distinguish over the prior art.

Regarding the rejection of independent claim 38, it is noted that claim 38 recites a method of preparing a positive active material including a core and a surface-treatment layer, for a rechargeable lithium battery, the method comprising: coating the core including at least one lithiated compound, with an organic solution of coating material source or an aqueous solution of coating material source; and drying the coated core at a temperature of approximately 60°C to 100°C, forming the surface treatment layer on the core, wherein **the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof**.

As noted above, Kweon discloses a positive active material for rechargeable lithium batteries and a method of preparing the same (column 1, lines 7-11). The method includes obtaining a powder from a source material and coating the powder with a vanadium pentoxide aqueous solution or a V_2O_5 alcoholic solution to make a V_2O_5 solution-coated powder. Thereafter, the V_2O_5 solution-coated powder is **heat-treated** to prepare a V_2O_5 coated active material (column 1, lines 50-63).

Kweon however, fails to teach or suggest a drying temperature range or that **the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof**, as recited in amended independent claim 38.

Accordingly, Applicants respectfully assert that the rejection of claim 38 under 35 U.S.C. §102(a) or (e) should be withdrawn because Kweon fails to teach or suggest each feature of independent claim 38, as amended.

Claims 11, 12, 15, 17, 18 and 38 are rejected under 35 U.S.C. §102(b) as being anticipated by Wang (U.S. Patent 5,783,328).

Applicants respectfully traverse this rejection for at least the following reasons.

Regarding the rejection of independent claim 11, it is noted that claim 11 recites a method of preparing a positive active material for a rechargeable lithium battery comprising: coating at least one lithiated compound with an organic solution of coating material source or an aqueous solution of coating material source to produce a coated lithiated compound; and drying the coated lithiated compound at a temperature of approximately 60°C to 100°C forming a surface treatment layer on the coated lithiated compound without further heat-treating the dried coated lithiated compound, wherein the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof.

Wang discloses a method of treating lithium manganese oxide. The method includes immersing in a lithium hydroxide solution at ambient temperature, lithium manganese oxide powder and stirring the mixture for sufficient time to saturate the powder with hydroxide. The solution is heated to evaporate substantially all the water contained therein leaving behind lithium hydroxide coated particles. The lithium hydroxide coated powder is exposed to an environment of carbon dioxide at a temperature between 200°C and 700°C, in other words, a heat-treating step. Such treatment removes any residual moisture from the coated powder (column 2, lines 30-44). However, when heat-treating is performed, a metal oxide layer is formed on the core. This metal oxide layer has relatively low ionic conductivity, which causes the internal resistance to increase and the discharge potential and power density to deteriorate.

Accordingly, Wang discloses a method for forming a positive active material by mixing a powder, removing the solvent from the saturated powder to obtain a compound, drying the compound and heat-treating the dried compound to form the positive active material. Therefore, Wang discloses a method for forming a positive active material along the lines as the one disclosed in the conventional art (see specification at page 12, lines 11-24), where the procedure includes a mixing step, a solvent removing step, a drying step and thereafter a heat-treating step.

As noted above, independent claim 11 recites drying the coated lithiated compound at a temperature of approximately 60°C to 100°C **forming a surface treatment layer** on the coated lithiated compound without further heat-treating the dried coated lithiated compound, **wherein** the **surface treatment layer includes** a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof.

Accordingly, although Wang discloses heating the solution to evaporate substantially all the water contained therein leaving behind lithium hydroxide coated particles, Wang fails to

teach or suggest drying the coated lithiated compound at a temperature of approximately 60°C to 100°C forming a surface treatment layer on the coated lithiated compound without further heat-treating the dried coated lithiated compound, wherein the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof.

Accordingly, Applicants respectfully assert that the rejection of claim 11 under 35 U.S.C. § 102(b) should be withdrawn because Wang fails to teach or suggest each feature of independent claim 11, as amended.

Furthermore, Applicants respectfully assert that the rejection of dependent claims 12, 15, 17 and 18 under 35 U.S.C. § 102(b) should be withdrawn at least because of their dependence from claim 11 and the reasons set forth above, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 12, 15, 17 and 18 also distinguish over the prior art.

Regarding the rejection of independent claim 38, it is noted that claim 38 recites a method of preparing a positive active material including a core and a surface-treatment layer, for a rechargeable lithium battery, the method comprising: coating the core including at least one lithiated compound, with an organic solution of coating material source or an aqueous solution of coating material source; and drying the coated core at a temperature of approximately 60°C to 100°C, forming the surface treatment layer on the core, wherein **the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof**.

As noted above, Wang discloses a method for forming a positive active material by mixing a powder, removing the solvent from the saturated powder to obtain a compound, drying the compound and heat-treating the dried compound to form the positive active material. Therefore, Wang discloses a method for forming a positive active material along the lines as the one disclosed in the conventional art (see specification at page 12, lines 11-24), where the procedure includes a mixing step, a solvent removing step, a drying step and thereafter a heat-treating step.

Wang however, fails to teach or suggest a temperature range at which the coated lithiated compound is dried or that a surface treatment layer including a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof is

formed.

Accordingly, Applicants respectfully assert that the rejection of claim 38 under 35 U.S.C. § 102(b) should be withdrawn because Wang fails to teach or suggest each feature of independent claim 38, as amended.

Claims 11-13, 15, 17, 18, 38 and 39 are rejected under 35 U.S.C. §102(b) as being anticipated by JP 09-171813 (hereinafter JP '813).

Applicants respectfully traverse this rejection for at least the following reasons.

Regarding the rejection of independent claim 11, it is noted that claim 11 recites a method of preparing a positive active material for a rechargeable lithium battery comprising: coating at least one lithiated compound with an organic solution of coating material source or an aqueous solution of coating material source to produce a coated lithiated compound; and drying the coated lithiated compound at a temperature of approximately 60°C to 100°C forming a surface treatment layer on the coated lithiated compound without further heat-treating the dried coated lithiated compound, wherein the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof.

JP '813 discloses an electrolyte battery including a positive electrode or a negative electrode covered with an inorganic ion conductive membrane. The positive electrode is formed by mixing one mol of cobalt carbonate with 0.5 mols of lithium carbonates, and $LiCoO_2$. Next, sodium-hydroxide was dissolved in water, and the aluminum hydroxide was dissolved in this mixture. Finally, the powder of $LiCoO_2$ and the aluminum hydroxide composite was dried at 120 or more degrees for 2 hours (paragraphs [0035] through [0038]).

Accordingly, JP '813 discloses forming an active material by dissolving aluminum hydroxide in an aqueous solution and drying the coated compound at 120°C or higher for 2 hours.

As noted above, independent claim 11 recites drying the coated lithiated compound at a temperature of approximately 60°C to 100°C forming a surface treatment layer on the coated lithiated compound without further heat-treating the dried coated lithiated compound.

Since JP '813 discloses drying the coated compound at a temperature much higher than the one recited in independent claim 11, JP '813 fails to teach or suggest the novel features recited in independent claim 11.

Accordingly, Applicants respectfully assert that the rejection of claim 11 under 35 U.S.C. § 102(b) should be withdrawn because JP '813 fails to teach or suggest each feature of independent claim 11, as amended.

Furthermore, Applicants respectfully assert that the rejection of dependent claims 12, 13, 15, 17, 18 under 35 U.S.C. § 102(b) should be withdrawn at least because of their dependence from claim 11 and the reasons set forth above, and because the dependent claims include additional features which are not taught or suggested by the prior art. Therefore, it is respectfully submitted that claims 12, 13, 15, 17, 18 also distinguish over the prior art.

Regarding the rejection of independent claim 38, it is noted that claim 38 recites a method of preparing a positive active material including a core and a surface-treatment layer, for a rechargeable lithium battery, the method comprising: coating the core including at least one lithiated compound, with an organic solution of coating material source or an aqueous solution of coating material source; and drying the coated core at a temperature of approximately 60°C to 100°C, forming the surface treatment layer on the core, wherein the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof.

As noted above, JP '813 discloses forming an active material by dissolving aluminum hydroxide in an aqueous solution and drying the coated compound at 120°C or higher for 2 hours, which is not in the range recited in independent claim 38.

Accordingly, Applicants respectfully assert that the rejection of claim 38 under 35 U.S.C. § 102(b) should be withdrawn because JP '813 fails to teach or suggest each feature of independent claim 38, as amended.

Regarding the rejection of independent claim 39, it is noted that claim 39 recites a method of preparing a positive active material for a rechargeable lithium battery comprising: coating a core having at least one lithiated compound with an organic solution of coating material source or an aqueous solution of coating material source; and drying the core at a temperature of approximately 60°C to 100°C without further heat-treating the core, forming a surface treatment layer on the core, wherein the surface treatment layer includes a coating element-included hydroxide, oxyhydroxide, oxycarbonate, hydroxycarbonate or a mixture thereof.

As noted above, JP '813 discloses forming an active material by dissolving aluminum hydroxide in an aqueous solution and drying the coated compound at 120°C or higher for 2 hours, which is not in the range recited in independent claim 39.

Accordingly, Applicants respectfully assert that the rejection of claim 39 under 35 U.S.C. § 102(b) should be withdrawn because JP '813 fails to teach or suggest each feature of independent claim 39, as amended.

REJECTIONS UNDER 35 U.S.C. §103:

Claims 21-24 are rejected under 35 U.S.C. §103(a) as being unpatentable over Wang.

Applicants respectfully traverse this rejection for at least the following reason.

Claims 21-24 depend from independent claim 11, and as noted above, Wang fails to teach or suggest the features recited in independent claim 11.

Accordingly, Applicants respectfully assert that the rejection of claims 21-24 under 35 U.S.C. § 103(a) should be withdrawn because Wang fails to teach or suggest each feature of independent claim 1, as amended, from which claims 21-24 depend and because claims 21-24 include features which are not taught or suggest by Wang.

CONCLUSION:

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 503333.

Respectfully submitted,

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